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MAJED-DEPIGMENTATION AS AN ALTERNATIVE TREATMENT FOR GINGIVAL HYPERPIGMENTATION: A CASE SERIES

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ABSTRACT

Recently, gingival hyperpigmentation caused by excessive melanin pigment deposition has become a major concern for the young population. Although this is not associated with any medical symptoms, but those with gummy smile makes the appearance very unaesthetic. The latest treatment modality for gingival hyper pigmentation used laser for de-pigmentation because of its innumerable advantages over conventional scalpel techniques. Hereby, we report case series on the cosmetic correction of gingival de-pigmentation using a special diode laser technique known as Majed de-pigmentation, which showed excellent results. This new technique serves as an alternative to conventional method, where a part of the gum (or epithelium) was removed. With jet print technique, the laser selectively destroys the target melanocytes (absorption and scattering) to reduce the de-pigmentation without local anaesthesia, antibiotic and periodontal pack. In conclusion, Majed jet print de-pigmentation is safe, quick and pain free technique with excellent haemostasis and coagulation effects. In addition, the healing was seen to be fast within 5-7 days with optimum aesthetic result.

KEYWORDS: Majed De-Pigmentation, Jet Print - Hyper Pigmentation, Lasers, Melanin

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Original Article

INTRODUCTION

Melanin pigmentation is the result of interwining of melanin granules produced by melanoblasts with the epithelial cells at the basal layer of the gingival epithelium. One of the most common causes of oral pigmentation is smoker melanosis, a condition associated with the melanocyte stimulation caused by cigarette smoke (Eisen 2000). In addition, the intensity of pigmentation is related to the duration of smoking and the number of cigarettes consumed (Meleti, et al. 2008). The pigmentation is mostly localized at the anterior labial gingiva, affecting females more than males. Smoking can also cause an excessive deposition of melanin in the oral epithelial layer of oral mucosa. Polycyclic amines such as nicotine and benzopyrenes, present in tobacco, can activate the melanocytes to produce melanin (Barrett & Scully 1994).

Gingivae are an important component of masticatory mucosa. The colour of gingivae is determined by the thickness of epithelium, keratinization degree, the degree of presence of melanin deposition, and the underlying connective tissue, including blood irrigation with presence of other pigments such as haemoglobin or oxyhaemoglobin (Hicks & Flaitz 2000). Treatment modalities for gingival depigmentation involve the use of various chemical agents, surgical and laser techniques. A new jet print technique, Majed de-pigmentation, represents an alternative for the above conventional techniques, where a part of gum was removed. The laser

selectively destroys the target melanocytes (absorption and scattering) to produce the de-pigmentation without local anaesthesia, antibiotic and periodontal pack. To best of our knowledge, no one used this technique before.

Hence, the study aims at using Majed de-pigmentation for correcting gingival hyper-pigmentation in 23 patients and ensuring a steady follow up for witnessing fast recovery.

CASE DESCRIPTION

Treatment Technique

Twenty-three cases complaining of diffuse upper and lower melanin pigmentation were presented at Maktoum Bin Hamdan Dental College, dental laser department. The procedure was explained verbally to the patient and consent was obtained. On examination, the patients were found to have a deeply pigmented gingiva. Pigmentation was unsightly, and hence, laser depigmentation procedures were performed. We report cases of cosmetic correction of gingival depigmentation using a diode laser using special technique known as Majed jet print de-pigmentation (Müller 2010, Cockings & Savage 1998, Sushma, et al. 2009, Ozbayrak, et al. 2000, Bradely 1997).

The technique was used on the palate, tongue, lip and gingiva with diffuse and deep black melanin pigmentation. A continuous mode was chosen for the procedure and ablation of the gingival epithelium was done in a contact mode after applying periodontal pack, which was not placed and the post-operative healing was uneventful. Topical anaesthesia (20% benzocain) was given to all patients. Laser ablation started from the 2nd upper premolar area to anterior. During the procedure, laser ablated the gingival epithelial surface little by little to reach the pigments without causing any bleeding (Figure 2). The diode laser exhibits thermal effects using the “hot-tip” effect caused by heat accumulation at the end of the fibre, and produces a relatively thick coagulation layer on the treated surface. Irradiation was done by a contact mode of the fibre and a slight degree of carbonization at the gingival or mucosal surface was seen during the procedure.

This technique started with punching the area in perpendicular 90-degree contact with the fibre with gingiva to reduce the reflection of laser emission, not requiring removal of any part of epithelium layer as old technique. A power setting of 1.8 watts with 400 um was used. Its photothermal emission was absorbed by the tissues, and the converted heat penetrated the superficial layer of gingiva to move deeply inside the basal and supra basal layer that includes melanin pigmentation. In addition, the absorption by photons and scattering property of laser leads to lateral and side radiation of the wide pigmented area.

Finally, the fibre was moved out after the penetration into the dark as well as slightly coloured areas. This led to thermal relaxation or interval cooling of these de-pigmented areas and generating a homogenous pink colour post-healing. This technique must be carefully performed in canine area due to its very thin gum that can produce gum recession. Gengingel or panasoral gel was prescribed, with or without analgesic and no need antibiotic. There was no need to apply a periodontal dressing. Patients were instructed to avoid smoking and eat hot and spicy foods for first 24 hours and were discharged from dental clinic to perform normal activity of daily living.

Healing was found to be good at 1st day (Figure 3), 2ndday (Figure 4), 3rd day (Figure 5) 4rth day (Figure 6), 5thday (Figure 7), 6thday (Figure 8), 7thday (Figure 9), 8th day (Figure 10), 9thday (Figure 11), 10 days (Figure 12), and 12th day (Figure 13), 15th day (Figure 14). No infection or significant post-operative complications such as pain or bleeding were encountered.

Case Report 1: A case study of 35 years old male patient showing pigmentation (Figure 1).

Case Report 2: A case study of 32 years old male patient (Figure 1) with pigmentation. The procedure was completed within 12 minutes.

Case Report 3: A case study of 23 years old female patient (Figure 1) with pigmentation. The procedure was completed within 13 minutes.

Case Report 4: A case study of 28 years old female patient (Figure 1).The procedure was completed within 13 minutes.

Case Report 5: A case study of 22 years old male patient with pigmentation (Figure 1). The procedure was completed within 14 minutes.

Case Report 6: A case study of 32 years old male patient with pigmentation (Figure 1)

Case Report 7: A case study of 31 years old male patient with pigmentation (Figure 1)

Case Report 8: A case study of 22 years old female patient with pigmentation (Figure 1)

Case Report 9: A case study of 23 years old female patient with pigmentation (Figure 1)

Case Report 10: A case study of 23 years old female patient with pigmentation (Figure 1)

Case Report 11: A case study of 35 years old male patient with pigmentation on tongue (Figure 1)

Case Report 12: A case study of 35 years old female patient with pigmentation (Figure 1)

Case Report 13: A case study of 32 years old male patient with pigmentation (Figure 1)

Case Report 14: A case study of 28 years old female patient with pigmentation (Figure 1)

Case Report 15: A case study of 25 years old female patient with pigmentation (Figure 1)

Case Report 16: A case study of 27 years old female patient with pigmentation (Figure 1)

Case Report 17: A case study of 26 years old female patient with pigmentation (Figure 1)

Case Report 18: A case study of 27 years old male patient with pigmentation (Figure 1)

Case Report 19: A case study of 34 years old male patient with pigmentation (Figure 1)

Case Report 20: A case study of 34 years old female with pigmentation (Figure 1)

Case Report 21: A case study of 34 years old female with pigmentation (Figure 1)

Case Report 22: A case study of 22 years old female with pigmentation (Figure 1)

Case Report 23: A case study of 23 years old female with pigmentation (Figure 1)

RESULTS AND DISCUSSIONS

Dark gingiva or hyper pigmented gingiva is an aesthetic dilemma in many individuals especially if the hyper pigmentation is on the facial or labial aspects of the gingiva and noticeable during smile and speech. Gingival pigmentation depends upon the vascular supply to the gingiva, keratinization, exogenous and endogenous pigments etc. A wide variation

in the pigmentation is seen among individuals depending upon these criteria. The difference in the oral pigmentation in males and females has been shown to be insignificant based on the studies conducted. It is this aesthetic provocation that compels the patient to pay a visit to the dentist.

In the present study, scalpel surgery was performed for de pigmentation in either of the arches in all the patients which resulted in intra operative bleeding and postoperative discomfort. The scalpel surgery also required profound infiltration anaesthesia. A periodontal pack had to be given to cover the de pigmented area to minimize patient's discomfort postoperatively (Jacques & Mc Auliffe 1991, Ciancio, et al. 2006).

The diode laser was aptly chosen for de pigmentation as the absorption spectrum of the diode laser light (800-980 nm) falls well within the absorption spectrum of the melanin pigment (351-1,064 nm). The added advantage of the diode laser is minimal depth of tissue penetration causing lesser tissue damage compared to the Nd: YAG laser, which has penetration capabilities of 4-6 mm tissue depth. The usage of the diode laser leaves behind a clean and sterile surgical field and due to the good homeostasis primarily resulting from sealed blood vessels of smaller diameter, periodontal pack was avoidable. Postoperative pain from oral surgical procedures has been claimed to be reduced after laser surgery. It is theorized that this may be due to a protein coagulum formed on the wound surface, thereby acting as a biological wound dressing and sealing the ends of sensory nerves (Castro, et al. 2006, Beehner, et al. 1986).

CONCLUSIONS

In conclusion, Majed de-pigmentation is a safe, quick and pain free technique with excellent haemostasis and coagulation. The healing was also excellent with optimum aesthetic result. However, further future studies in needed on this new and innovative technique for finding out its wider applications in dentistry and other medical field.

CONFLICT OF INTEREST

None to declare.

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APPENDICES

Figures

Figure 1: Pre-Operative Photographs of 23 Cases Presented with Pigmentation of Gingiva and Tongue

Figure 2: Photographs Taken During the Laser Treatment

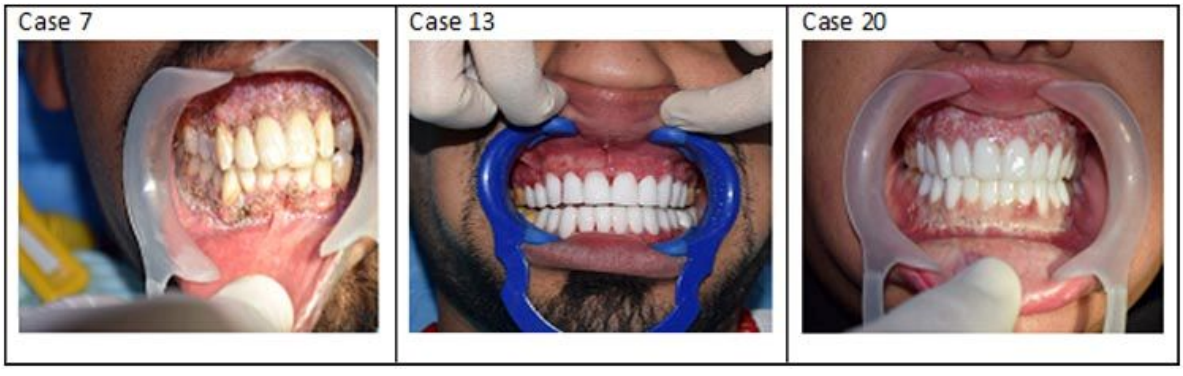

Figure 3: Post-Laser Healing After 1st Day of Treatment

Figure 4: Post-Laser Healing after 2nd Day

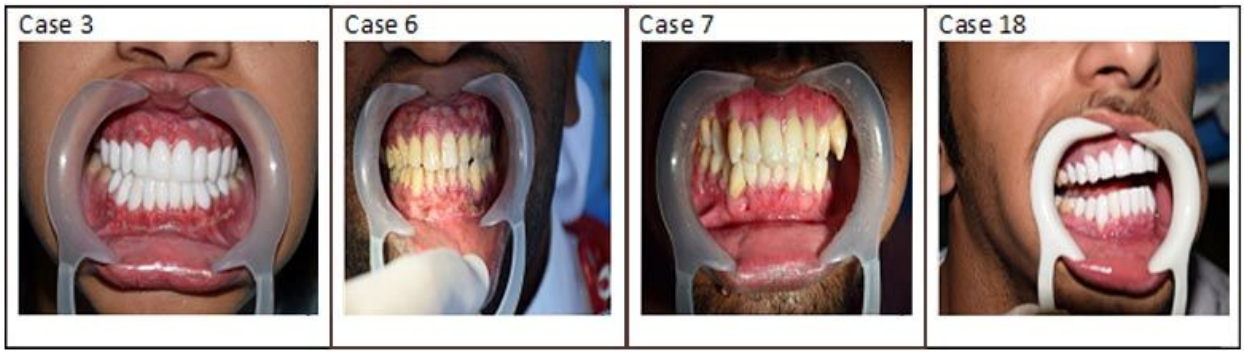

Figure 5: Post-Laser Healing after 3rd Day

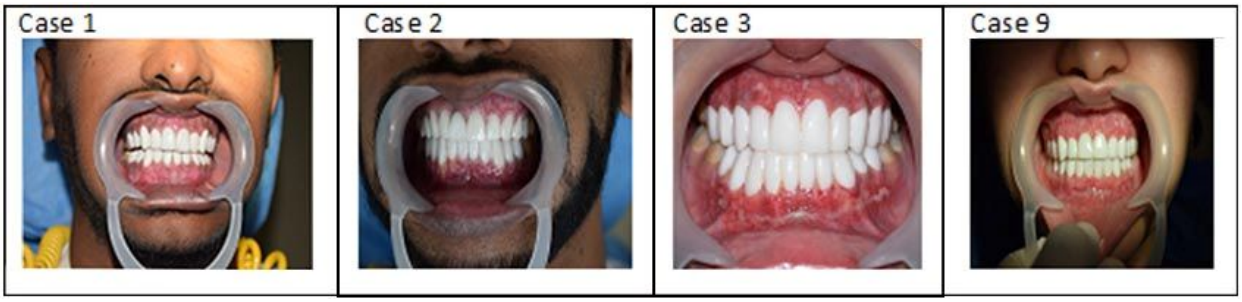

Figure 6: Post-Laser Healing after 4th Day

Figure 7: Post-Laser Healing after 5th Day

Figure 8: Post-Laser Healing After 6th Day

Figure 9: Post-Laser Healing after 7th Day

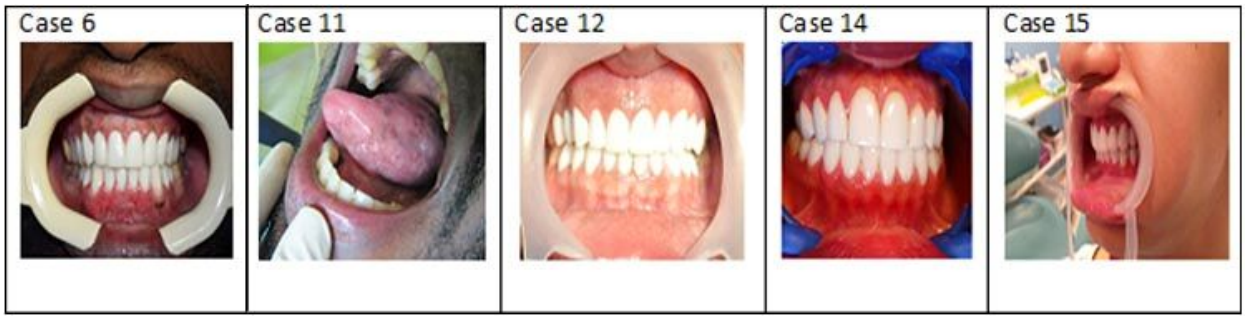

Figure 10: Post-Laser Healing after 8th Day

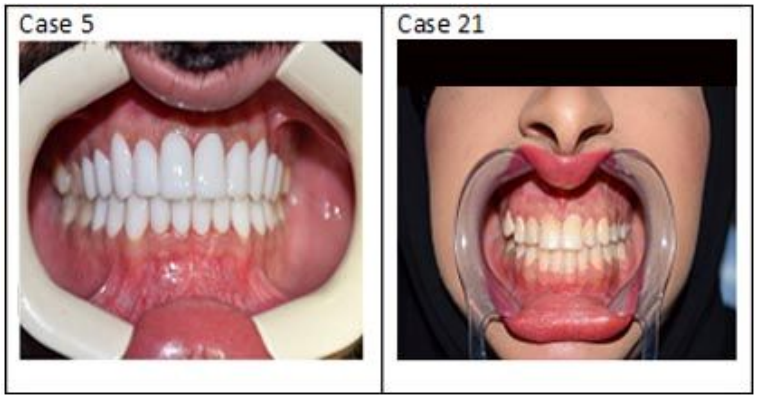

Figure 11: Post-Laser Healing after 9th Day

Figure 12: Post-Laser Healing after 10th Day

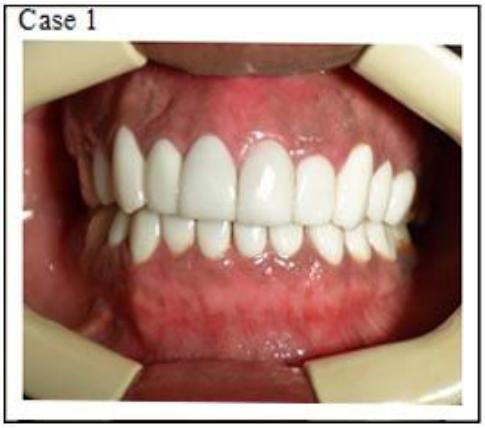

Figure 13: Post-Laser Healing after 12th Day

Figure 14: Post-Laser Healing after 15th Day